

APPENDIX 2

merlin



User Guide

***"I am Merlin. I'm at your service." --- From a tale still told
in Brittany***

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SECRET

Merlin is a complete visual development environment composed of sophisticated programs that are unconstrained by application-specific intelligence and are driven by a series of RAK – Repository of Application tables that are populated by a business Subject Matter Expert (SME) --- not a programmer.

This technique ensures that what traditionally has been an extremely time consuming and expensive Information Technology (I/T) process to build and maintain systems --- can now become a user driven and controlled process.

The power of Merlin is as applicable to the trucking industry as it is to medicine, to pharmaceuticals, to insurance, to any industry, company, organization, or individual with a desire to regain control of their data and applications or with a desire to more dynamically manage their data in a fast changing world.

II. Merlin RAK Management Wizard (MRAK-Wizard)

The following is a brief description of the Merlin Repository of Application Knowledge Management Wizard (MRAK-Wizard).

A SME's primary interface to Merlin, its controls and Repository of Application Knowledge (RAK) tables is through (MRAK-Wizard). This wizard is used by the SME to either dynamically build or modify the data in these tables, data that in turn drives Merlin.

Note: as each new component is added or modified by an SME he or she can invoke Merlin and witness the result of their undertaking. This allows an SME to prototype as they build; quickly catching any mistakes they might make and take corrective action.

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The screenshot displays the MRAK-Wizard interface. At the top, a table lists keypad data:

KeypadID	SeqNumber	DisplayText	EntryText
Address_Designation_CD	10	Domestic	US
Address_Designation_CD	20	Foreign	FA
Address_Designation_CD	30	E-Mail	EM
Address_Designation_CD	40

Below the table, the interface is divided into two main sections. The left section, titled "Select Form to Change:", shows a list of forms with "New Allergy Data" selected. Below this, a "Table List" contains various controls like "CoverSheet_Display", "DropDown_Control", etc. The right section, titled "Change Keypad Control", shows a tree view of the application structure. The tree is expanded to show the "Keypad_ID" node, which contains "Address_Designation_CD", "Seq_Number", "Display_Text", and "Entry_Text". The "Seq_Number" node is further expanded to show "10". The "Display_Text" node is expanded to show "Domestic". The "Entry_Text" node is expanded to show "US".

The above is the primary wizard GUI that allows an SME to,

- Select RAK tables to change.
- Select forms to change if applicable
- Select a row in a table to change
- Select columns in a row to change
- Modify entered data
- Add new choices for data
- Add or modify Merlin Control objects to be used.
- Rearrange displayed forms, trees, menus, fields, keypads, etc
- Specify new or changed codes to be stored in an application database
- Add new trees, menus, dropdowns, keypads, forms, etc.
- Rearrange which users get which functions and features,
- Add new features as dictated by the needs of the business,
- Etc.

The choices for how to build and expose an application are limited only by the mind of the SME and the needs of the business.

MRAK-Wizard Illustration1

In the above example an SME has chosen to change the KeyPad_Control RAK. The data is displayed as follows.

- The window on the right exposes the columns from first Keypad_ID from the RAK in the large pane on the right. These columns and their data are shown in a tree format.
- The name of the keypad is displayed in a dropdown combo box at the upper right.
- The rows from this RAK are exposed in the window at the top.

At this point a SME can,

- Modify data from one or more of the columns (tree nodes shown) by double clicking it.

Following is an example of a SME double clicking Domestic below. They are presented with a text box in which they can change the description of a keypad shown to a user to anything up to 18 characters.

A SME can also change Seq_Number so the keypad choice does not show up first in the keypad choices but 2nd, 3rd, last etc.

063443 08EJ07

[illegible]

063443 08EJ07

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4	Address Designation	
5	Address Line 1	
6	Address Line 2	
7	Address Line 3	
8	Attention:	
9	City	
10	State	AL
11	ZIP	
12	Carrier Code	
13	E-Mail Address	
14	Country	
15	Country Mailing Code	

Select "Address Designation"

Foreign	E-Mail	APO
FPO	Continental US	Other

The main MRAK-Wizard GUI Keypad example continued

KeypadID	SeqNumber	DisplayText	EntryText
Address_Designation_CD	10	Domestic	US
Address_Designation_CD	20	Foreign	FA
Address_Designation_CD	30	E-Mail	EM

Select Form to Change:

Select Table to Change:

Table List

- CoverSheet_Display
- DropDown_Control
- Exe_Control
- Form_Control
- Form_Display
- Icon_Control
- Keypad_Control
- Menu_Control
- Menu_Tree
- Search_Control
- System_Control
- Tree_Control
- VB_Controls

Select: Keypad_ID

Change Keypad Control

Displaying Row Number: 1

Make Changes as Required!

- [-] Keypad_ID
 - [-] Address_Designation_CD
- [-] Seq_Number
 - [-] 10
- [-] Display_Text
 - [-] Domestic
- [-] Entry_Text
 - [-] US

In addition to merely changing existing data shown, a SME can,

- Choose a different row in the keypad shown to change,
- Choose a different keypad and row to change,
- Add a new row to an existing keypad,

- Add a new keypad, etc.

The process used in illustrating changes and modifications to the KeyPad_Control RAK, although not extensive in nature due to the limited functionality of a keypad control object, is very similar to that a SME will encounter using the MRAK-Wizard to manage any and all RAK control tables.

MRAK-Wizard Illustration 3

An SME decides it is necessary to change the New Counseling Data dynamically generated form.

On the MRAK-Wizard thee would choose the RAK table – Form_Display, and the Form – New Counseling Data. They would be presented with the following.

The screenshot shows the MRAK-Wizard interface. At the top, there is a table with the following data:

FormID	SeqNumber	FieldName	UseIDDisplayForm	DisplaySize
History_Counseling	100	Patient_ID	Patient ID	14
History_Counseling	200	Short_ID	Short ID	5
History_Counseling	300	Counseling_CD	Counseling Type	6

Below the table, the 'Select Form to Change' panel shows 'New Counseling Data' selected. The 'Select Table to Change' panel shows a 'Table List' with the following items:

- CoverSheet_Display
- DropDown_Control
- Exe_Control
- Form_Control
- Form_Display
- Icon_Control
- Keypad_Control
- Menu_Control
- Menu_Tree
- Search_Control
- System_Control
- Tree_Control
- VB_Controls

The 'Change Form Display' panel shows a 'Displaying Row Number' of 3. The 'Field List' on the right shows the following fields:

- Counseling_CD
- Label_Display_Text
- Counseling Type
- Display_Size
- 6
- Data_Link_Number
- Null
- Required_IND
- 1
- Help_Ind
- 0
- Field_Format_CD
- DROPDOWN**
- Data_Type
- Null
- Default_Value
- Null
- Yes_DropDown_ID
- Counseling_CD
- No_DropDown_ID

As with the keypad RAK they can choose to change the current row, position the GUI on a different row to be changed, or add a new row.

On the above example the field Counseling_CD calls for a Field_Format_CD of DROPDOWN, meaning the Merlin Dropdown control object will access the Dropdown_Control RAK table using the Dropdown_ID found in

Yes_Dropdown_ID above to display a list of choices when a user of the Merlin Clinical application attempts to enter data in this field.

It would look like the following to the Merlin Clinical application user.

Current Open Form: New Counseling Data	
Description (*)Required	Input Data
1 * Patient ID	
2 * Short ID	
3 * Counseling Type	OT=Other
4 Counseling Remarks	ASUB=Alcohol or Substance Abuse CANP=Cancer Prevention DENT=Dental FAMP=Family Planning FIT=Fitness

If the SME using the MRAK-Wizard above decided to change this from a dropdown to a data Tree they would

- Change Field_Format_CD to TREE,
- Change Dropdown_ID to NULL
- Change Yes_Tree_ID to Counseling_CD.
- Establish the Counseling_CD rows in the Tree_Control RAK.

The next time a user of the Merlin clinical application chose to enter counseling history data they would not be presented with the dropdown above, but with a data tree as follows.

Current Open Form: New Counseling Data	
Description (*)Required	Input Data
1 * Patient ID	
2 * Short ID	
3 * Counseling Type	
4 Counseling Remarks	

The illustrations and examples are limitless as is the flexibility and options presented to a business SME for how an application is built, presented to end users and managed.

MRAK-Wizard Illustration 4

In our illustrations using the clinical application and the MRAK-Wizard, if the SME determines that their users should have access to the Merlin Data Interchange Macro Recorder (DIMR) object, the SME would use the MRAK-Wizard to,

- Add a new MAIN and SUB menu choice or simply a new SUB under an existing MAIN that would indicate that the RUNEXE Merlin object was to be invoked and that the EXE_ID was to be DIMR, or whatever name they chose.
- They would then add a new row to the EXE_Control RAK as follows.

Exe_ID	SeqNumber	Exe_Path
DIMR	100	C:\M2K_DIMR\DIMR.exe
CODING_WIZARD	200	C:\M2K_WORKSTATION\Codingwizard.exe
Protocol_Wizard	210	C:\M2K_WORKSTATION\ProtocolWizard.exe
Gov Form Wizard	220	C:\M2K_WORKSTATION\GovFormWizard.exe

Select Form to Change:
Open a Patient

Select Table to Change:
Table List

- CoverSheet_Display
- DropDown_Control
- Exe_Control
- Form_Control
- Form_Display
- Icon_Control

Change EXE Control

Displaying Row Number: 1

Make Changes as Required!

- Exe_ID
 - DIMR
- Seq_Number
 - 100
- Exe_Path
 - C:\M2K_DIMR\DIMR.exe

When the application menu was refreshed it might then look similar to this.

File Tools Help Exit Last Menu Merlin Help Exit Last Menu

Current Open Form: Patient Demographics

	Description (*)Required	In
1	* Patient ID	
2	* Short ID	
3	Name Prefix	
4	* Last Name	
5	* First Name	
6	Middle Name	
7	DOB	01
8	Generational Suffix	

When a user chooses DIMR from the menu the following will be exposed.

Current Open Form: Patient Demographics		DIMR	
Description (*)Required	Input Data	Macro will start in ST420NT	
1 * Patient ID		Book Jacksonville Walk In	
2 * Short ID		Book Unscheduled Walk In	
3 Name Prefix		Cancel One Order	
4 * Last Name		Cancel Two Orders	
5 * First Name		END TEST	
6 Middle Name		Exit And Book Follow Up	
7 DOB	01AUG2001	Go To A D S	
8 Generational Suffix		Go To Great Lakes	
9 Professional Suffix	NA	Go To Madigan	
10 Marital Status		Go To Region One	
11 Gender	MA	HISTORY LOGIN PLEASE	
12 Race	OT	I C D B CODING	
13 Religion	OT	Insert Chest X-Ray	
14 Primary Care Physician		Insert D X List	
15 Primary Care Physician Phone		Insert Med Profile	
16 Patient Has Emer Contacts?	N	INSERT PATIENT ID	
17 Is Patient also Guarantor?	N	Insert Patient Profile	
18 Is Patient Military?	N	INSERT SHORT FORM PROFILE	
19 Patient IEN		M2K CREATE COMMERCIAL PENICILLIN SCRIP	
20 Med Treatment Facility		M2K GET CONSULT	
21 Location of O/P File		M2K INSERT HEADER INFO	
22 Patient SSN		M2K MAIL THIS SCRIPT	
23 Does Patient have Insurance?	N	M2K STANDARD FOLLOWUP	
24 Patient Photograph		MADIGAN OUTPATIENT PENICILLIN	
		MARLIN TEST	
		Negative IVP Reading	
		Order C B C	
		Order ENT Consult	
		Order PAP Smear	
		Order Print Penicillin	
		Outpatient Biaxin	
		Outpatient CBC	
		Outpatient Order Entry	
		Outpatient Penicillin	
		Outpatient Percocet	
		OUTPATIENT WARFARIN	
		Production A D S	
		Production Appointment	
		RADIOLOGY ENTER	
		Radiology Reading	
		Radiology Results Please	
		RETURN THIS CONSULT	
		SWITCH TO MED2000	
		SWITCH TO OUTLOOK	
		TEST CAPS	
		VERIFY BATCH REPORTS	
		WEB PROFILE PLEASE	
		ZZ CHCS INSERT PATIENT ID	

The DIMR is a Merlin object and wizard that allows a user to easily and quickly build macro scripts that can,

- Extract data from Merlin and drive it into its proper place in one or more different applications,
- Extract data from another application and drive it into its proper place in Merlin
- Automatically populate the Merlin form,
- Automatically populate the Merlin form and drive the data into its proper place in one or more other applications,
- Automatically populate the other application drive the data into its proper place in Merlin.
- Etc.

The DIMR also has a full-featured set of controls to allow a user to easily create, edit and voice activate the control object to play the scripts.

The DIMR wizard is covered later in this document.

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III. Merlin's Help Wizards

The Merlin control objects provided to assist an SME in building Help for the intended users of the application come in three flavors.

- Quick Tips
- Specific help for a particular field on a form
- Standardized application level help built using the Merlin SYSTEMHELP control object. This provides an easy method for an SME to create 'How Do I?' and 'Index' hyper linked help subjects.

1. Quick Tip – This facility allows a SME to specify that a short timer message should appear over the field on a form when a user right clicks the label. The help message is limited to the size of the field and it only appears for a time in milliseconds specified by the SME.

For example, on the following the SME has utilized the MRAK-Wizard to,

- Select the New Allergy Data form,
- Select the Form Display RAK,
- Select the row that represents the field for Allergy reaction, and
- Modify the Quick Tip to 'Be very specific with details'.

The screenshot displays the MRAK-Wizard interface. At the top, a table lists form fields:

FormID	SeqNumber	FieldName	LabelID	DisplayText	DisplaySize
History_Allergies	500	Allergic_Reaction		Allergic Reaction	50
History_Allergies	600	Allergy_Remarks		Allergy Remarks	255

Below the table, the interface is divided into two main sections:

- Select Form to Change:** A dropdown menu showing "New Allergy Data".
- Select Table to Change:** A list box containing a "Table List" with the following items: CoverSheet_Display, DropDown_Control, Exe_Control, Form_Control, Form_Display, Icon_Control, Keypad_Control, Menu_Control, Menu_Tree, Search_Control, System_Control, Tree_Control, and VB_Controls.

On the right side, there is a **Save** button and a **Change Form Display** section. This section includes a "Displaying Row Number:" field set to "5". Below this is a tree view of control objects:

- Null
- Yes_DropDown_ID
 - Null
- No_DropDown_ID
 - Null
- Yes_Tree_ID
 - Null
- No_Tree_ID
 - Null
- Yes_KeyPad_ID
 - Null
- No_KeyPad_ID
 - Null
- Yes_Format_Control
 - Null
- No_Format_Control
 - Null
- Quick_Tip
 - Be very specific with details

The SME then decided to change the time these quick tips would be displayed before disappearing. To accomplish this, the SME utilized the MRAK-Wizard to,

- Select the Form_Control RAK,
- Modify the System Timer to 1500 milliseconds as follows.

Seq Number	Voice	System Timer	With Users
100	NO	1500	NO

Select Form to Change:

New Allergy Data

Select Table to Change:

Table List

- CoverSheet_Display
- DropDown_Control
- Exe_Control
- Form_Control
- Form_Display
- Icon_Control
- Keypad_Control
- Menu_Control
- Menu_Tree
- Search_Control
- System_Control
- Tree_Control
- VB_Controls

Save

Change System Control

Make Changes as Required!

- ☐ Seq_Number
 - 100
- ☐ Voice
 - NO
- ☐ System_Timer
 - 1500
- ☐ With_Users
 - NO

Invoking Merlin after this change the SME would see the following Quick Tip when right clicking on Allergic Reactions.

	Description (*)Required	Input Data
1	* Patient ID	20/711906508
2	* Short ID	Z6508
3	* Allergy Type	NA
4	* Specific Allergy	
5	Allergic Reaction	Be very specific with details
6	Allergy Remarks	

- Specific help for a particular field – This facility allows a SME to build a help file for a field(s) This will cause Merlin to automatically display a Help indicator when a user has a field in focus for which the SME has built help.

For example, on the following the SME has utilized the MRAK-Wizard to,

- Select the New Allergy Data form,
- Select the Form Display RAK,
- Select the row that represents the field for Allergy Remarks, and
- Changed the Help_IND from 0 (NO) to –1(YES).

FormID	SeqNumber	FieldName	LabelDisplayText	DisplaySize
History_Allergies	500	Allergic_Reaction	Allergic Reaction	50
History_Allergies	600	Allergy_Remarks	Allergy Remarks	255

Select Form to Change:

New Allergy Data

Select Table to Change:

Table List

- CoverSheet_Display
- DropDown_Control
- Exe_Control
- Form_Control
- Form_Display
- Icon_Control
- Keypad_Control
- Menu_Control
- Menu_Tree
- Search_Control
- System_Control
- Tree_Control
- VB_Controls

Save

Change Form Display

Displaying Row Number: 6

Make Changes as Required!

- Form_ID
 - History_Allergies
- Seq_Number
 - 600
- Field_Name
 - Allergy_Remarks
- Label_Display_Text
 - Allergy Remarks
- Display_Size
 - 255
- Data_Link_Number
 - Null
- Required_IND
 - 0
- Help_Ind
 - 1
- Field_Format_CD
 - LONGTEXT
- Data_Type

The SME then built a standard RTF file in the Merlin text file note pad that stored it in the Merlin Help directory with the name Allergy_Remarks.

When a user chooses help for this field, the Merlin Field Help Control object would expose the help as follows.

Current Open Form: New Allergy Data

	Description (*)Required	Input Data
1	* Patient ID	20/711906508
2	* Short ID	Z6508
3	* Allergy Type	NA
4	* Specific Allergy	
5	Allergic Reaction	
6	Allergy Remarks	

Allergy Remarks.

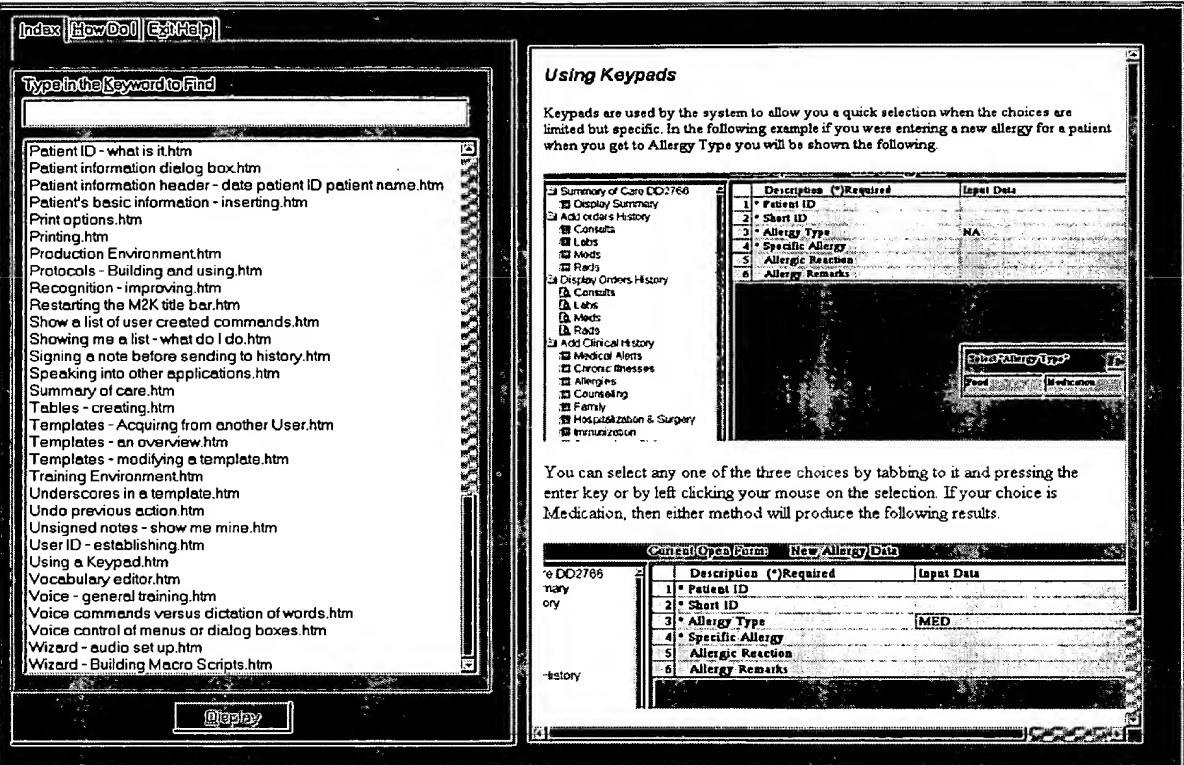
Please indicate any additional information mregarding this patient's allergy that would be helpful to clinical personnel in the future. Include period of time patient has suffered from the allergy, special considerations and treatments received in the past, etc.

Save Clear

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3. Merlin system level application help - This facility allows a SME to build standard HTML help files that the Merlin system level help object will display when this help is chosen.

For example, on the following the SME has utilized the Help Object-Wizard to build and display a new index HTML help file on the use of keypads. When chosen by the user it will appear exactly as the SME built it since the Wizard to build help files and the wizard to display them to a user is the same. The only difference is in the options of use allowed a SME as opposed to an application system user.



VI. Merlin's Data Interchange Macro Recorder (DIMR) Wizard

The DIMR is a comprehensive set of Visual programs that allow a user to record any repeatable series of task bar application switching, keystrokes, mouse clicks, etc. and have them saved within a macro that can be played with the simple issuance of a voice command, mouse click or keyboard entry.

The DIMR is a Merlin object and wizard that allows a user to easily and quickly build macro scripts that can,

- Extract data from Merlin and drive it into its proper place in one or more different applications,
- Extract data from another application and drive it into its proper place in Merlin
- Automatically populate the Merlin form,
- Automatically populate the Merlin form and drive the data into its proper place in one or more other applications,
- Automatically populate the other application drive the data into its proper place in Merlin.
- Drive down the normal hierarchical menu system typically found in legacy systems.
- Exchange data with a legacy system
- Etc.

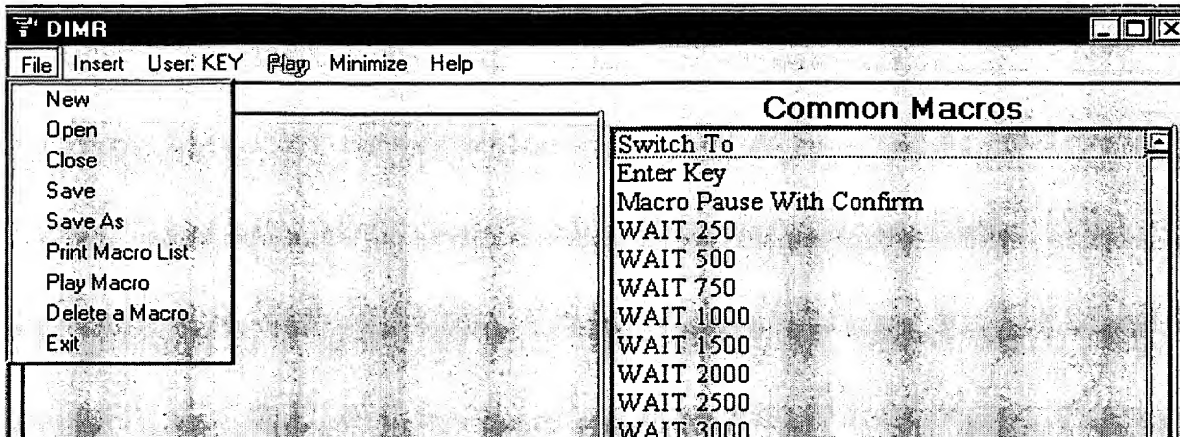
A real world example

After only a few days one of the physicians at a military medical treatment facility had created over 120 different macro commands that accounted for more than 96% of all clinical orders and order types he issued into that facilities legacy clinical information system. His estimate was that this one feature allowed him to recapture over an hour per day in productive time to see more patients or spend more time with his current patient load. His calculations were based on the fact that he saw 20 patients a day, issued 3 orders per patient and the average time saving per order was between 45 seconds and one and one half minute.

The DIMR is composed of the following features and sub-features.

DIMR, Adding/Editing a Macro --- Overview

The add/edit function of the DIMR is composed of these primary sections:



1. A title bar indicating in which active application the macro execution will begin in.
2. Menus as follows:
 - a) File allows you to;
 - Open a new macro,
 - Edit an existing macro,
 - Close and save macros using your specified name,
 - Print your macro list,
 - Play an existing macro,
 - Delete a macro, and
 - Exit the DIMR.
 - b) Insert allows you to insert into an open macro any of the following;
 - Common macros to do standard Windows application functions,
 - Any one of your saved macros. This creates an imbedded macro inside another macro,
 - Shared macros – This allows you to imbed any users macro into one of yours,
 - Templates – If you are an M2K user you can have DIMR script macros automatically insert your templates during the execution of a script macro.

- c) User: is followed by the name of the logged in User.
- d) Play will play the open macro.
- e) Minimize allows you to specify that you want the DIMR to be minimized while playing macros.
- f) Help

- 3. Below the menus is the recording window on the left. This window is where your macro will be shown as it is recorded.
- 4. The List window is on the right. This is where the list of common macros, your macros, other user created macros, and/or your templates are displayed.

Recording Scripts

Starting a new Macro.

To start recording a new macro press File and then New. You will be presented with a list of all applications currently active on your task bar.

Selected Menu Name	Selected Class Name
DIMR	DIMR
DIMR	DIMR
WINWORD	
MARLIN_RECONFIG	
FULLSHOT99	
MARLIN	
DIMR	
WINWORD	
M2K	
MSMSGs	
OUTLOOK	

Highlight the application in which the macro will be started and press Start in. If your application is not on the list, start it so that it is on your task bar and then click Refresh List. It will now be on the list.

[illegible]

Start Recording.

To enter other than standard keystrokes in the wizard, just click on the appropriate Insert choice on the menu. There are no limitations to the number of keystrokes or lines you can record in the wizard. Just remember to limit a single line in the wizard to a set of keystrokes or one item from the list.

Waits are system pauses you can use if any application is having difficulty keeping up with your torrid stream of keystrokes. When you play your command, if the application appears to be jumping over keystrokes without executing them you will have to place some Waits between your keystrokes. You do this by placing your cursor at the beginning of a line in the wizard and then, click on one of the waits in the list window. These range from 1/4 second to 5 seconds of pause before the next series of keystrokes are sent to the application. The Waits are listed in milliseconds.

This common macro is used whenever you are trying to record a script that encounters an area in which the next entry is not always the same. This macro will pause the running of a script and allow a user to enter their own keystrokes, reposition in an application, etc. and the continue with the script.

Saving your macro. Once you are satisfied, simply choose file and save. You will be asked for a name, and you're ready to use it.

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This form allows you to open a macro, Play a macro, delete macros that are no longer needed, and print a list of your macros.

There are multiple methods you can use to play your macro scripts.

- ## Sharing Your Scripts With Others or Using Scripts Others Have Created

To acquire a script that someone else has created, simply choose Insert and Insert from Shared. You will be presented with a list of macros by user.

If you are inserting from shared without a script open in the add/edit form you will be given the entire script including its Start In application.

You will now have a new script presented in your add/edit script window just as if you had created it line by line.